

REMARKS

This is in response to the Office Action dated August 29, 2007. In view of the foregoing amendments and following representations, reconsideration is respectfully requested.

By the above amendment, claims 1, 6, 8, 9, 10 and 11 are amended to more clearly define the novel features of the present invention. Accordingly, claims 1, 3-6 and 8-12 are currently pending in the present application.

On pages 2-3 of the Office Action, claims 1, 3-6 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hinshaw (U.S. Patent No. 3,327,513) in view of Fenc1 (U.S. Patent No. 4,722,216). It is submitted that the present invention, as embodied by the amended claims, now clearly distinguishes over the Hinshaw and Fenc1 references for the following reasons.

Hinshaw discloses a tapered mandrel 10 and a pair of plate member 24, 26 which are actuated to move toward each other during a drawing operation to move the mandrel and the tubing 20 relative to a drawing ring 34.

The present invention, as defined in independent claim 1, is directed to a method for working a welded tube (corresponding to "blank tube" of claim 1) that ensures excellent precision in an inner circular shape thereof. In particular, the claimed method is effective to improve the circularity of welded portions. Since the welded portions have properties that are different from the other portions due to the high temperature during the welding operation, a swaging operation by itself cannot achieve adequate circularity of the welded portions. Thus, the welded portions will have different thickness in relation to the other portions (see Fig. 5).

The present invention was developed to solve the problems associated with the working of welded tubes, and combines a swaging operation with a special flattening operation for moving a push-die to the blank tube from a radially outward position to flatten a weld portion on the blank tube.

In contrast, Hinshaw is not concerned with the resulting circularity of welded tubes, and therefore does not disclose or suggest an operation for flattening an inner surface of a weld portion on the blank tube (welded tube). Therefore, Hinshaw clearly lacks a method or apparatus in which a swaging operation is combined with an operation for flattening a weld portion.

Further, according to the present invention, the flattening operation is performed without withdrawing the mandrel, and thus the same mandrel can be used for the swaging operation and for the flattening operation. On the other hand, Hinshaw does not disclose a combination of a swaging operation and a flattening operation, and thus the Hinshaw reference clearly lacks any operation that would correspond to the language of claim 1 that requires withdrawing the cylindrical die "while keeping the mandrel in the blank tube". Furthermore, although radial forging is known, there is no reason, absent the disclosure of the present application, to combine the swaging operation of Hinshaw with the radial forging operation of Fencil.

Further, the applied references, even in combination, still do not meet each and every limitation of claim 1. In particular, the cylindrical die of the present invention is "non-formable" and more rigid than the blank tube, and therefore it can be used repeatedly. On the other hand, the cylindrical die of Hinshaw must be "formable" (see col. 4, lines 15-40) in order to achieve its object of "applying a taper to tubing" (see col. 1, line 33). Accordingly, even if the apparatuses

of Hinshaw and FencI could be combined as proposed by the Examiner, the resulting combination would still be different from that of the claimed invention. Note that claim 11 also requires a "non-formable cylindrical die".

In view of the above, it is submitted that claim 1 and corresponding apparatus claim 11 are clearly allowable over the collective teachings of the Hinshaw and FencI references. Further, claims 3-6 and 8-12 depend, directly or indirectly, from one of the allowable independent claims, and are therefore allowable at least by virtue of their dependencies.

Furthermore, dependent claims 6 and 8-10 have been amended to recite that the relief portion is arranged at an inner portion that is spaced from an open end of the cylindrical die to extend circumferentially, thereby reducing a working pressure requirement in the squeezing operation (see paragraphs [0025] and [0031] of the present specification). The "open end" is the foremost portion of the cylindrical die when approaching a blank tube.

The Examiner relies on Figs. 6 and 7 of Hinshaw to meet the claimed relief portion. However, Figs. 6-7 are axial sections through the drawing ring (i.e. not the cylindrical die), and clearly do not show a circumferentially extending relief portion that is spaced from an open end of the cylindrical die. Thus, the Hinshaw and FencI references clearly do not disclose or suggest a relief portion as required in claims 6 and 8-10.

In view of the above, it is submitted that the present application is now clearly in condition for allowance. The Examiner therefore is requested to pass this case to issue.

In the event that the Examiner has any comments or suggestions of a nature necessary to place this case in condition for allowance, then the Examiner is requested to contact Applicant's undersigned attorney by telephone to promptly resolve any remaining matters.

Respectfully submitted,

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